

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/016172

A. CLASSIFICATION OF SUBJECT MATTER  
Int.Cl<sup>7</sup> F16C32/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
Int.Cl<sup>7</sup> F16C32/04Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2005  
Kokai Jitsuyo Shinan Koho 1971-2005 Toroku Jitsuyo Shinan Koho 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2002-39178 A (Ebara Corp.), 06 February, 2002 (06.02.02), Fig. 1 & EP 1176325 A2	1,2
Y	& US 2002/11754 A1	3,4
X	JP 7-12125 A (Shimadzu Corp.), 17 January, 1995 (17.01.95), Fig. 1 (Family: none)	1,2
Y		3,4
X	JP 9-84214 A (Yaskawa Electric Corp.), 28 March, 1997 (28.03.97), Fig. 1 (Family: none)	1,2
Y		3,4

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
"A"	document defining the general state of the art which is not considered to be of particular relevance
"E"	earlier application or patent but published on or after the international filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed
"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search  
21 January, 2005 (21.01.05)Date of mailing of the international search report  
15 March, 2005 (15.03.05)Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP 6-229419 A (Seiko Seiki Kabushiki Kaisha), 16 August, 1994 (16.08.94), Fig. 4 & EP 632209 A1 & US 5666013 A & DE 69414919 C	1 2-4
X A <input checked="" type="checkbox"/>	JP 10-70865 A (Ebara Corp.), 10 March, 1998 (10.03.98), Fig. 3 (Family: none)	1 2-4
X A	JP 8-145056 A (Ebara Corp.), 04 June, 1996 (04.06.96), Fig. 1 (Family: none)	1 2-4
Y <input checked="" type="checkbox"/>	JP 11-22730 A (Koyo Seiko Co., Ltd.), 26 January, 1999 (26.01.99), Claims 1 to 3 (Family: none)	3, 4